Assessing and improving efficiency in the PhD

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- Why is it important?

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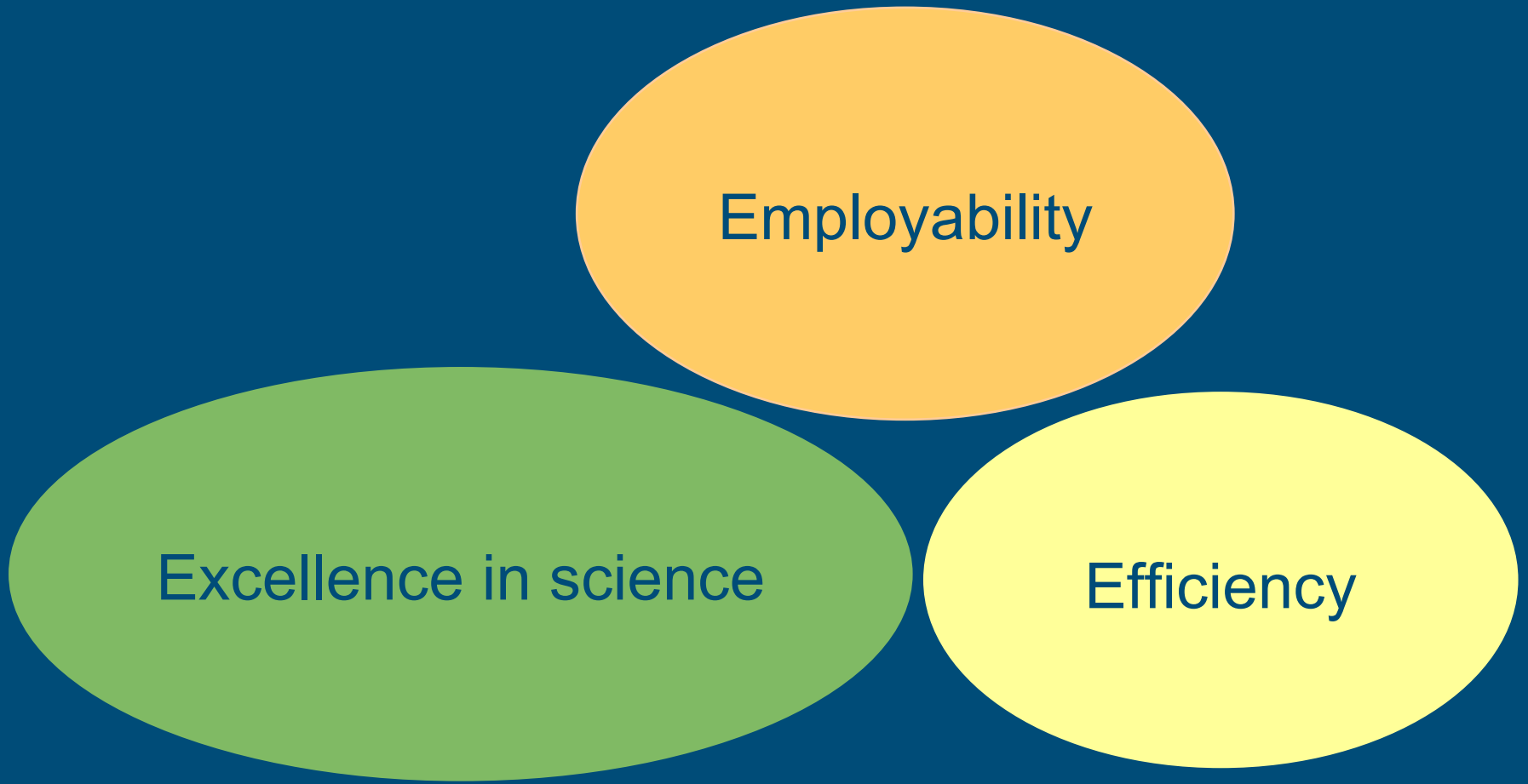
What is ‘efficiency’ in the PhD?

Excellence in science comes first, but...

- How many candidates get their PhD degree?
  - Completion rate
- How much time do they need for that?
  - Time to degree

What matters in a PhD programme?



Examples from the Netherlands

nominal duration 4 years

full-time, employed PhD candidates

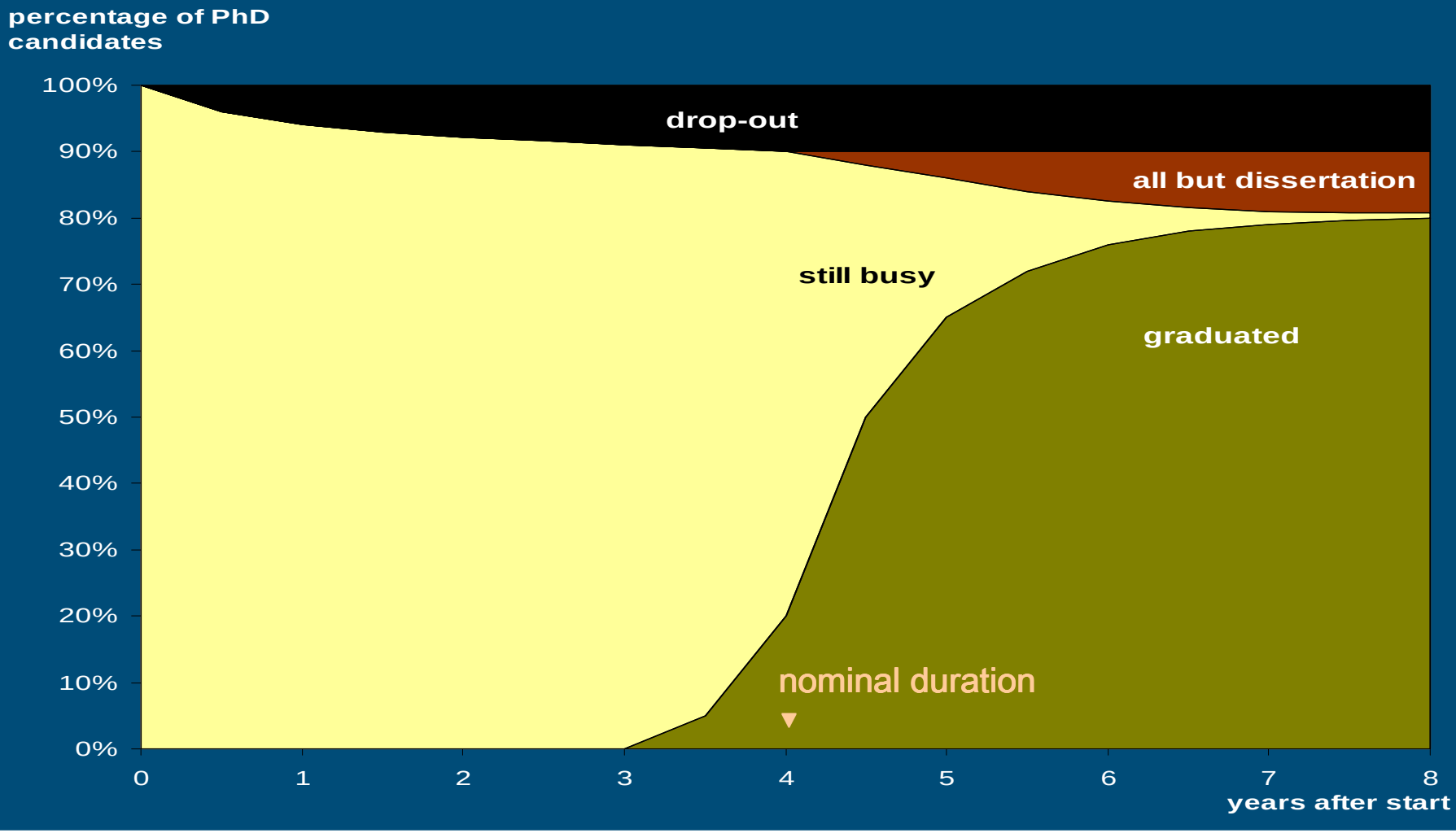
Percentage graduated	*arts and humanities*	*social sciences*	*natural sciences*
in 4 years	5%	6%	10%
> 7 years	55%	70%	75%

data: VSNU 2010

Why is efficiency in the PhD important?

- For the PhD candidate
  - A PhD is not ‘just a job’, failure is a personal drama
  - Candidates from overseas may face extra trouble
  - Hard to finish the PhD thesis when on a new job
- For supervisors and universities
  - Failure is a waste of time and money
  - Success attracts new PhD candidates
- For society
  - We need new talents!

How to assess efficiency?



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Cohort choice – clear and homogeneous

- By entry cohort or by graduation year?
  - Data availability
  - State clearly what you choose
  - Never mix up
- Type and status of PhD candidates
  - Full-time or part-time
  - University-based or external
  - Scientific field

Clear definitions – data comparison

Define:

- Entry requirements

- Moment of start
- Moment of finish

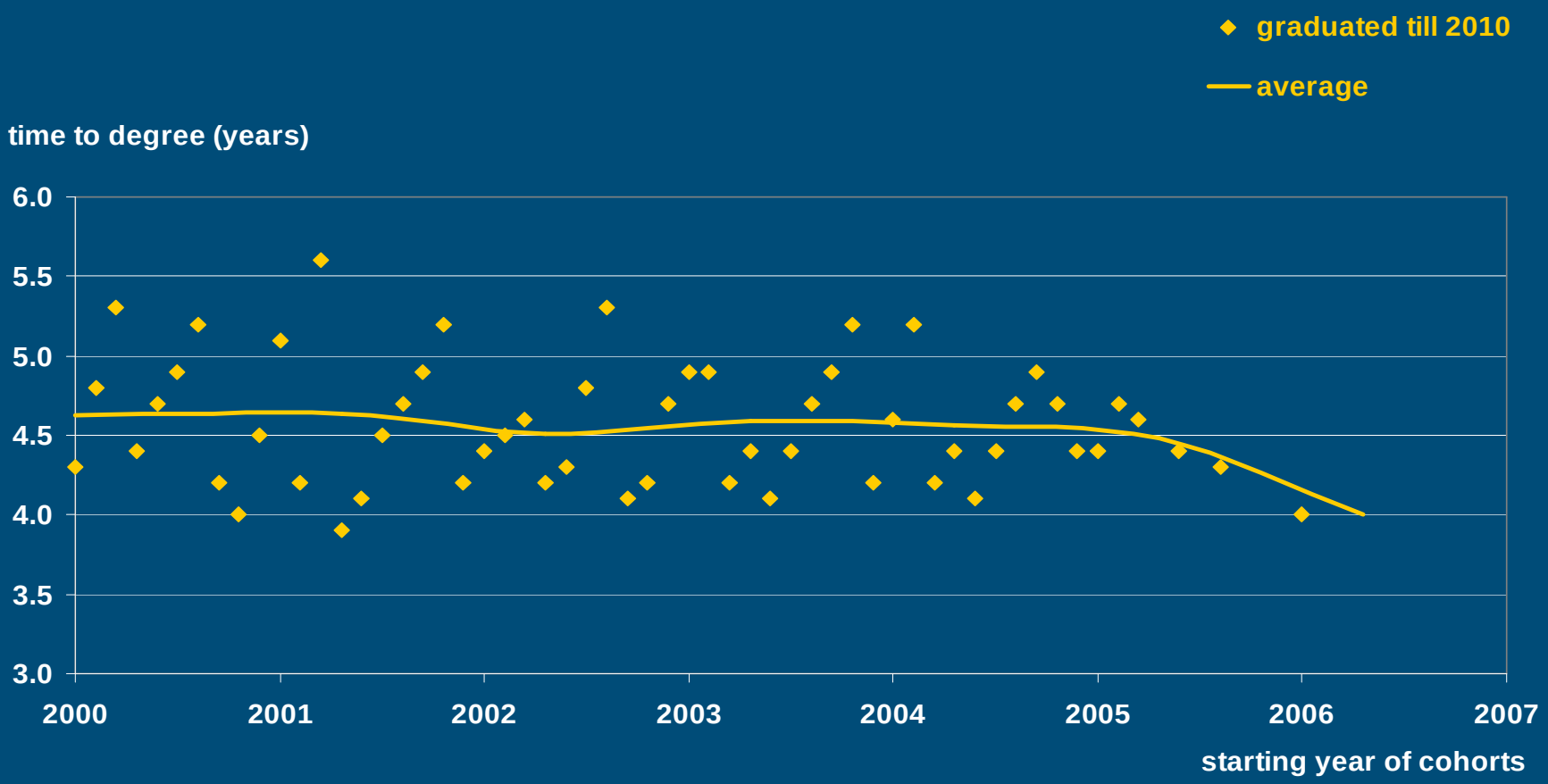
- Nominal duration
- Time available for research

- Thesis requirements

Indicators – use and limitations

indicator	*analysis by entry cohort*	*analysis by graduation year*
Percentage graduated in 4, 5, 6, 7 years	+	±
Median time to degree	+	±
Average time to degree	X	±
Final completion rate	+	?
Percentage drop-out after 1, 2, 3, 4 years	+	?

Bias in average time to degree



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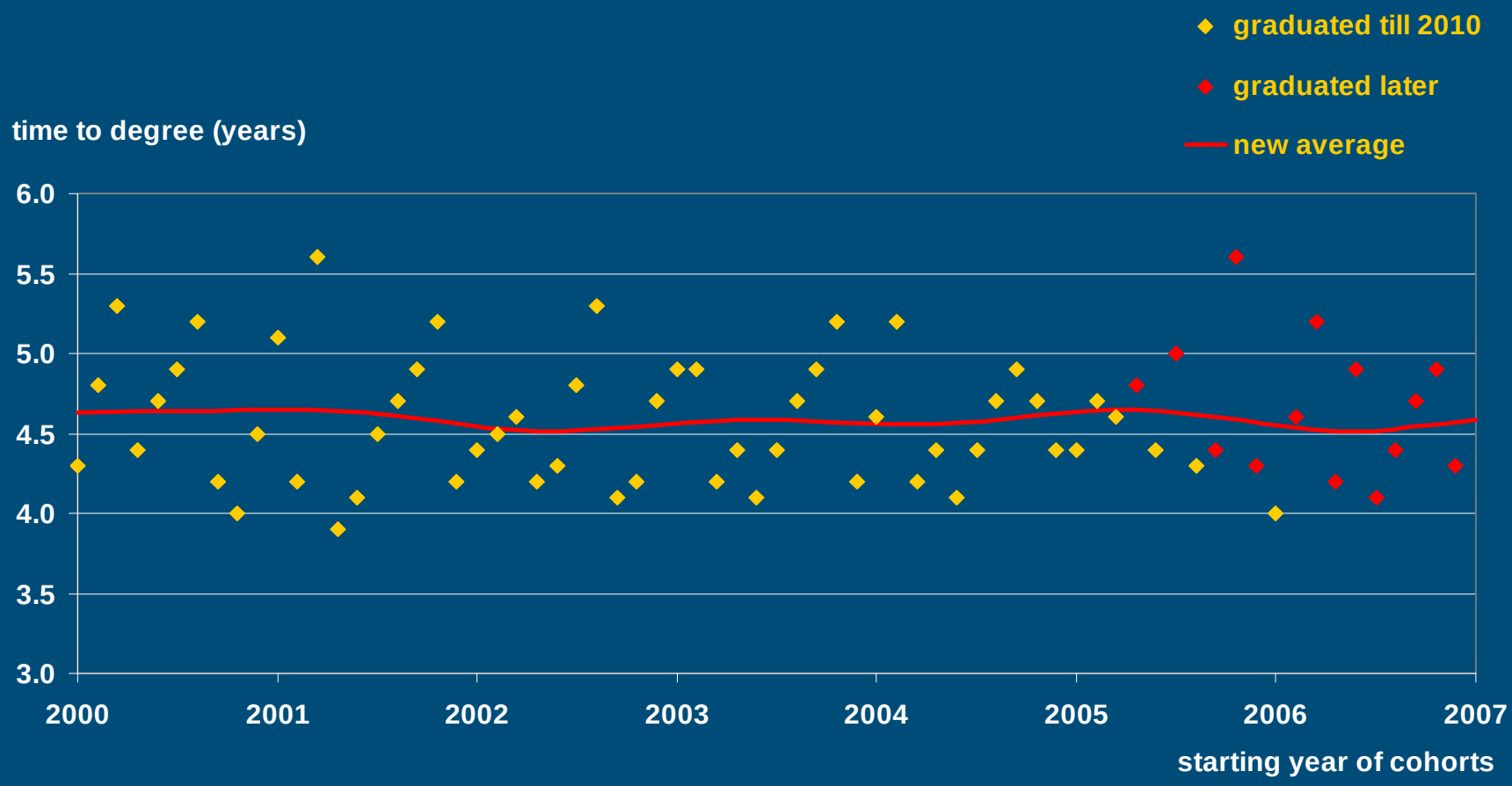
Bias in average time to degree



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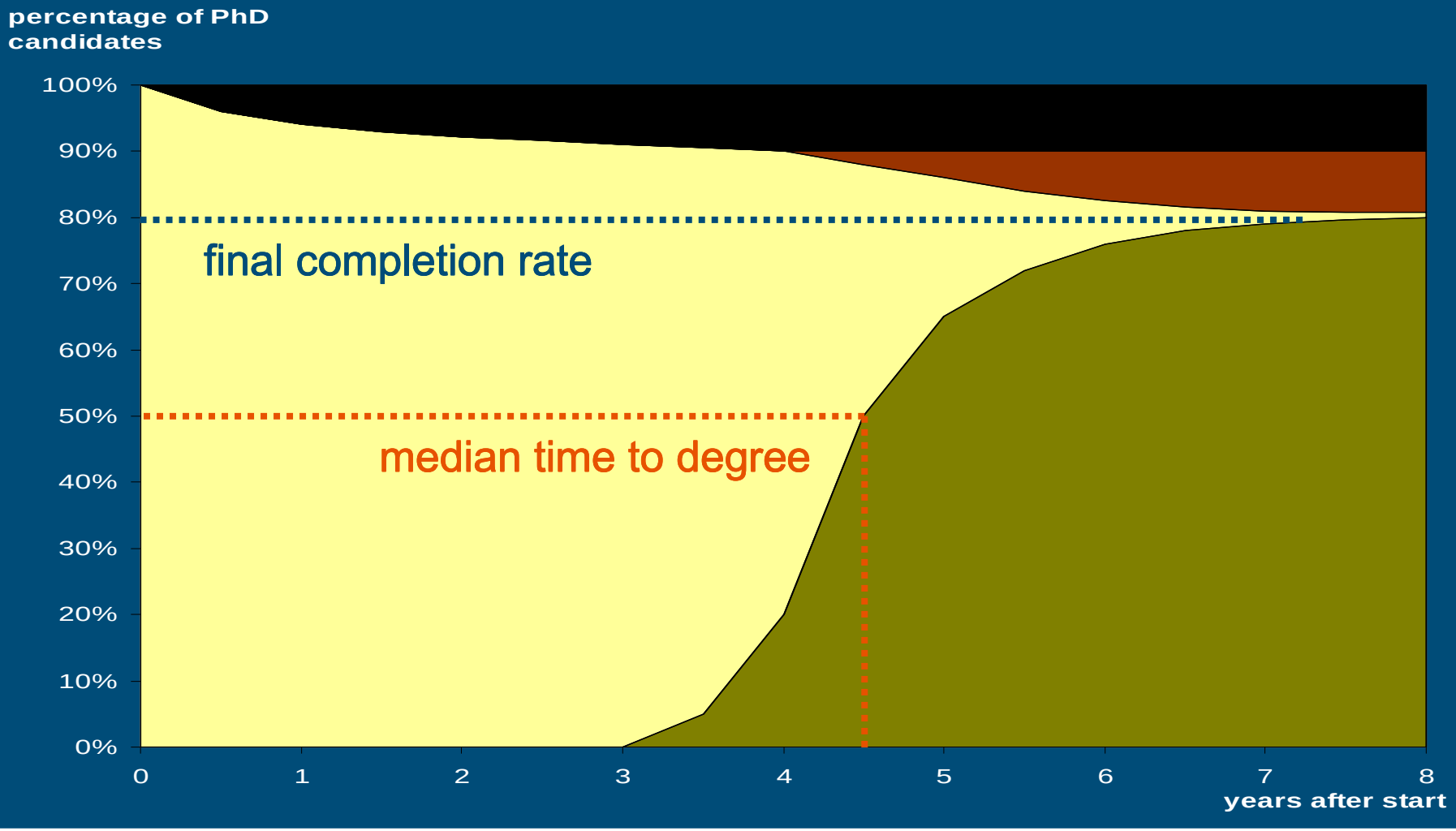
Average or median time to degree?

Analysis by entry cohort	*average time to degree*	*median time to degree*
As indicator	unstable over time, sensitive to outliers	robust
In trend analysis	bias at the end	unbiased

Two best indicators in cohort analysis



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How to improve efficiency – an example

- WIAS: PhD in animal sciences
  - nominal duration 4 years
  - accredited since 1994
  - 100 PhD candidates (at that time)

- Re-accreditation in 1999: decrease time to degree

- What we did
  - analyse causes of graduation delay
  - motivate and monitor supervisors and PhD candidates

Analysis of graduation delay – set-up

- Inquiry among PhD graduates and supervisors
  - Only full-time, Wageningen-based candidates (N=75)
  - Causes of delay quantified to explain time to degree

- Example

Nominal duration	4.0 years
Examination committee	0.3 year
Failed experiment	0.5 year +
Time to degree	4.8 years

Analysis of graduation delay – main results

- Causes of delay
  - Very varied, both project-related and personal
  - Training and education no negative effect on progress
  - More delay, more causes – one delay may lead to more
  - Small delay leads to big delay due to new job

Decrease graduation delay – actions taken (1)

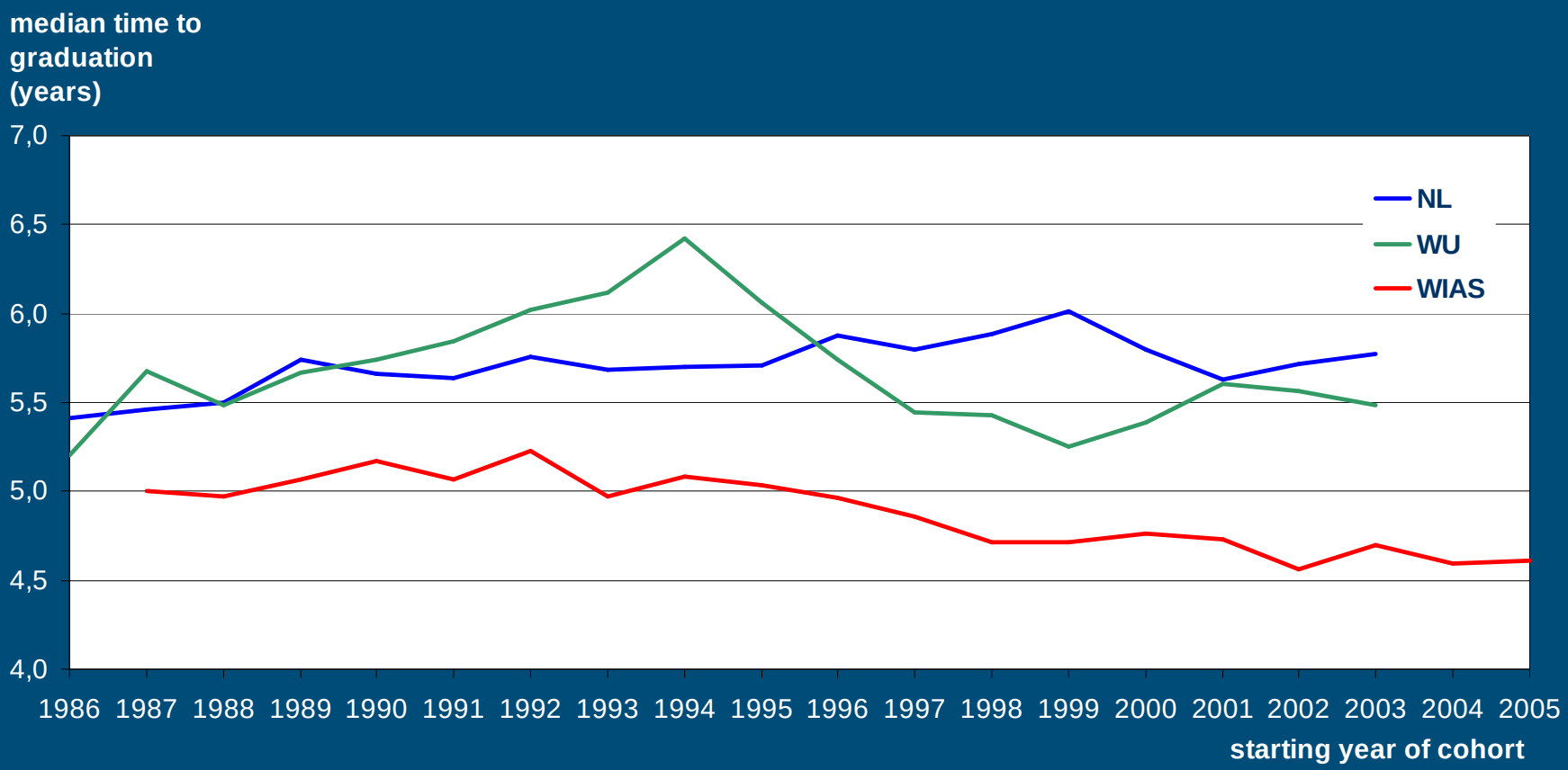
- Two workshops for PhD candidates and staff
  - Discuss results of the inquiry
  - Supervision as a ‘two-way’ process
- Supervision
  - Supervision plan for each PhD project (make expectations clear)
  - Courses for supervisors
- External review of PhD project proposals
  - Quality
  - Feasibility – effective research time three years

Decrease graduation delay – actions taken (2)

- Progress and supervision
  - Go / no go after one year
  - Midterm evaluation:
    - ‘If there is delay, how are you going to solve it?’
    - ‘Is supervision according to expectations? If not, adapt it!’
  - PhD Confidant
  - Paid extension if needed
- Thesis standards
  - Four published or publishable papers plus general introduction and general discussion should be the standard, not the minimum

Results – 10 years later

full-time, employed PhD candidates



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Issues to discuss

- A final completion rate below 75% should be regarded as a problem.
- To assess the problem, at least some hard data is needed.
- But to solve it, PhD candidates and supervisors must be involved, together.
- And preferably they value the school's measures such as quality control, monitoring and mediation.